

#### IV. JOB HAZARD ANALYSIS

TYPE OF OPERATION: EXPLOSIVE OPERATIONS

DATE: June 21, 2000

ANALYSIS MADE BY: Doug Reynolds

COMPANY: JET RESEARCH CENTER

ANALYSIS REVIEWED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

COMPANY: \_\_\_\_\_

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<u>SEQUENCE OF STEPS</u>	<u>POTENTIAL HAZARDS</u>	<u>APPROPRIATE CONTROL</u>
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GENERAL BLASTING	DEATH or SEVERE INJURY	USE ONLY PROPERLY TRAINED PERSONNEL DURING BLASTING OPERATIONS and FOLLOW ALL SAFETY PRECAUTIONS.
PRIMING OF EXPLOSIVE	DEATH or SEVERE INJURY	MAKE UP BOOSTERS IN ACCORDANCE WITH ESTABLISHED METHODS
		MAKE SURE DETONATORS ARE SHUNTED UNTIL READY TO CONNECT TO FIRING LINE.
		DO NOT FORCE DETONATORS INTO AN EXPLOSIVE. INSERT THE DETONATOR INTO A HOLE MADE BY A SUITABLE PUNCH



LOADING EXPLOSIVE

DEATH or SEVERE INJURY

CHECK EACH DETONATOR WELL CAREFULLY TO ASSURE IT IS IN A SAFE CONDITION FOR LOADING.

DO NOT FORCE DETONATORS INTO THE DETONATOR/FUSEWELL.

DO NOT PLACE UNNECESSARY OF THE BODY OVER THE FUSEWELL.

RECOGNIZE THE POSSIBILITY OF STATIC ELECTRICAL HAZARDS AND TAKE ADEQUATE PRECAUTIONARY MEASURES.

PARTS

FIRING THE CHARGE

DEATH or SEVERE INJURY

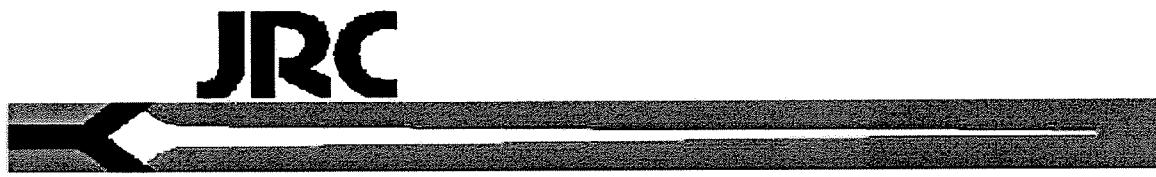
ALWAYS COMPLY WITH ALL FEDERAL STATE AND LOCAL LAWS AND REGULATIONS.

DO NOT FIRE THE CHARGE WITHOUT A POSITIVE SIGNAL FROM THE PERSON IN CHARGE.

MAKE SURE ALL PERSONNEL, BOATS, BARGES, EQUIPMENT AND SURPLUS EXPLOSIVE MATERIALS ARE IN A SAFE PLACE AND THAT ADEQUATE WARNING HAS BEEN SOUNDED.

DON'T FIRE THE SHOT FROM AN UNSAFE POSITION.

DO NOT ALLOW UNAUTHORIZED PERSONNEL TO RETURN TO THE SITE UNTIL IT IS SAFE AND THE "ALL CLEAR" HAS BEEN SOUNDED.



#### V. EXPLOSIVE LICENSE:

Date: 10-09-03:08p

Doug Reynolds

361-573-7382

P.5

GRAY DAVIS Governor



DIVISION OF OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

DIVISION OF OCCUPATIONAL SAFETY  
AND HEALTH ADMINISTRATIONA Division of the California  
State Workforce Development  
and Employment Security  
Department  
www.dir.ca.gov/OSHA/OSHA.htm

Received 10/09/03

Halliburton Energy Services  
 Attn: Douglas W. Reynolds  
 2802 A Delmar  
 Victoria, TX 77901

Dear Mr. Reynolds

Congratulations on passing your Blaster's examination. Enclosed, please find your blaster's license, which is valid for five years. This license reflects the classification of (D) Demolition of Steel Structures, as recommended by Stan Rhyu. Please destroy the license that was sent to you in August that did not reflect the Demolition classification. As a reminder of the importance and responsibility you have assumed by becoming licensed, I recommend that you read Labor Code Sections 6711, 7993, 7994, and 7995.

Please sign your license and carry it with you whenever you are performing as the licensed blaster designated by your employer. It is recommended that you have it laminated after signing since it must be carried for five years.

Sincerely,  
 Duane Nieser  
 Blaster's License Program Administrator

CDS:ln

State of California  
 Division of Occupational Safety and Health  
 1367 F. Lassen Ave., Suite H-4  
 Chico, CA 95923 (530) 895-6938  
 No. 6837  
 DOUGLAS WAYNE REYNOLDS D.O.B. 3/31/43

is hereby certified/licensed as a Blaster  
 Classification: (E) GENERAL ABOVE GROUND CONSTRUCTION &  
 MINING (E) LIMITED: WELL SERVICE (D) DEMOLITION.  
 STEEL STRUCTURES ONLY. SER REVERSE

Limitation: ELECTRIC AND NON-ELECTRIC AND  
 CAP/FUSE INITIATIONS.

This certification or license may be suspended or revoked if the holder  
 violates the safety orders or regulations of the Division.

*Douglas W. Reynolds* - Expires 10/1/06  
 Signature of Holder

*Douglas W. Reynolds* - Date of Issue 10/1/01  
 Signature of Holder S-Pac 12-87  
 DOB 03/31/43 Duane Nieser

# JRC

Sep 10 01 09:39p

Doug Reynolds

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P. 2

## DEPARTMENT OF THE TREASURY - BUREAU OF ALCOHOL, TOBACCO AND FIREARMS

## LICENSE/PERMIT (18 U.S.C. CHAPTER 40, EXPLOSIVES)

In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 50), you may engage in the activity specified in this license/permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. See "WARNING" and "NOTICES" on back.



AT&T MAILING ADDRESS ONE NATIONAL RESEARCH CENTER ATF 2600 CENTURY PARKWAY, SUITE 400 Atlanta, GA 30339	LOCATION POSTAL ZIP CODE PHONE NUMBER FAX NUMBER	6123251521 125711 443-225-1521 443-225-1521 443-225-1521 443-225-1521
AT&T RESEARCH CENTER AT&T 2600 CENTURY PARKWAY, SUITE 400 Atlanta, GA 30339	LOCATION POSTAL ZIP CODE PHONE NUMBER FAX NUMBER	8422 S. INTERSTATE 35W ALVARADO, TX 76009-0000 817-274-1200 817-274-1200
DE MANUFACTURER OF HIGH EXPLOSIVES		
<i>D. L. Williams</i> D. L. Williams Signature of ATF PERMITTER		
RECEIVED NO CERTIFICATION AT&T RESEARCH CENTER AT&T 2600 CENTURY PARKWAY, SUITE 400 Atlanta, GA 30339		
LICENSEE OR PERMITTEE MAILING ADDRESS NANCY WILLIAMS HALLIBURTON ENERGY SERVICES, INC. AT&T RESEARCH CENTER 2600 CENTURY PARKWAY, SUITE 400 Atlanta, GA 30339 8422 S. INTERSTATE 35 WEST ALVARADO, TX 76009-0000		
This license/permittee is not herein granted a dispensation of any other permit or record requirement or privilege to carry, transport, or possess the dangerous devices set forth in 27 CFR Part 50 and is subject to all other laws and regulations of this chapter.		
AT&T 5400-147342015 Part 1 (8/6/92)		

EXPIRATION DATE  
Division of Occupational Safety and Health  
U.S. Department of Health and Human Services  
U.S. Public Health Service

No. 1680

JOHN STEVEN KELLY D.O.B. 10/26/52

Blasting, earthmoving and BLOXING  
Demolition, CLIMTED, STEEL STRUCTURE,  
AND BOILER DESLAGGING BLASTING.

SFC REVERSE

ELECTRIC AND NON-ELECTRIC

## INITIATIONS

This information may be subject to mandatory revision if the following  
are initiated or become applicable:

*John Steven Kelly 6/27/02*  
*Glenn T. Nelson 6/27/02*  
Glenn T. Nelson, S.A., ATF

THINK SAFETY

WORK SAFE

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Page 37 of 39

Dawn Reynolds

361-573-7382

p. 3

LICENSE PERMIT (16 U.S.C. CHAPTER 40, EXPLOSIVES)

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CHICAGO, ILLINOIS 60614, CLASSIFIED CENTER

BRUNSWICK 22

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1000 N SAM HOA LANE, PORTLAND, OREGON 97203

*Journal of Clinical Endocrinology*

#### ANALYSIS OF WATER POLLUTION AGREEMENTS

**CONTRACTORS STATE LICENSE BOARD**

256183

2028

HALLIBURTON ENERGY SERVICES  
TSC

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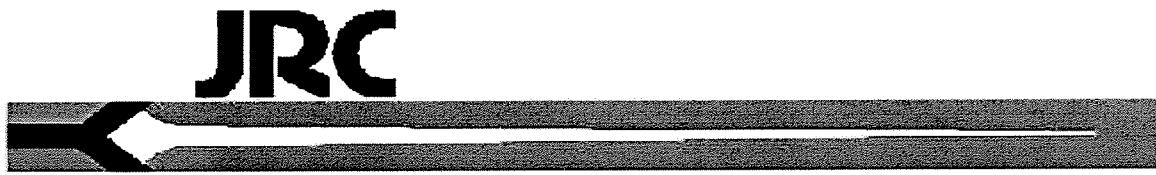
2024-07-31/2004



THINK SAFETY

WORK SAGE

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## VI. MATERIAL SAFETY DATA SHEETS

## MATERIAL SAFETY DATA SHEET

Accident Response Information Program  
29 CFR 1910.1200

MSDS ID: 102.004

IDENTITY: LINEAR SHAPED CHARGE with RDX, Desensitized (Aluminum, Copper, Lead, or Pewter Sheathing)		NOTE: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate this.		
HAZARD RATING:	HEALTH - 2	FLAMMABILITY - 3	REACTIVITY - 4	SPECIAL - High Explosive Component

### SECTION I - MANUFACTURER'S INFORMATION

Manufactured/Chemical Name: Accurate Ammunition, Inc. 10001 Research Street, Suite 102, ZEPPO, MS 38601 5801 Highway 230 W. Kosciusko, Tennessee 39090	Emergency Telephone Number: 1-800-250-3924 Reportable Emergency Telephone Number: 1-615-729-4201
Date Prepared: Prepared by: July 3, 1996 March 1, 1996	
Signature of Preparer (optional): L. McRae	

### SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity; Common Name(s))	% (estimated)	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED
RDX (Cyclonite; Cyclotriethylenetrinitramine; Hexogen) CAS #: 121-82-4	As required	Not established	1.5 mg/m <sup>3</sup> TWA (skin)	3.0 mg/m <sup>3</sup> STEL (skin)
Desensitizing Wax	As required	2 mg/m <sup>3</sup> *	2 mg/m <sup>3</sup> *	N/A
* These exposure limits are for paraffin wax fume, similar to this material				
Graphite	CAS #: 7782-42-5	As required	N/A	2.5 mg/m <sup>3</sup> TWA
Aluminum (metallic sheathing)	CAS #: 7429-90-5	...	15 mg/m <sup>3</sup> (total) 5 mg/m <sup>3</sup> (resp)	10 mg/m <sup>3</sup> (dust) 5 mg/m <sup>3</sup> (resp) NIOSH
Copper (metallic sheathing)	CAS #: 7440-50-8	...	1 mg/m <sup>3</sup> (dust/fume)	0.2 mg/m <sup>3</sup> TWA 1 mg/m <sup>3</sup> NIOSH
Lead (metallic sheathing)	CAS #: 7439-92-1	...	0.05 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup> NIOSH
Pewter (tin, copper, & antimony) (metallic sheathing)	...	Not established	0.5 - 2 mg/m <sup>3</sup>	N/A

### SECTION III - PHYSICAL and CHEMICAL DATA (NOTE: Data is for RDX, Desensitized only except "Appearance and Odor")

Boiling Point	N/A	Evaporation Rate (n = 1)	1.8 (RDX)
Vapor Pressure	$4.08 \times 10^{-4} \text{ at } 110^\circ\text{C}$ (RDX)	Volatilization Rate (n = 1)	RDX - 190-200°C WAX - 60°C
Vapor Density (n = 1)	N/A	Evaporation Rate (n = 1)	N/A
Insolubility	Insoluble		

Appearance and Odor: Chevron shaped silver, copper, or gray colored metal tube with the core load ranging from white to dark gray depending on wax and/or graphite content. No distinctive odor.

**SECTION IV - FIRE and EXPLOSION HAZARDS**

Flash Point	N/A	Flammability Class	UEL N/A	UEL N/A
<b>Extinguishing Agents:</b> Water sprayer or deluge system which is automatically activated.				
<b>Special Fire Fighting Procedures:</b> Do not attempt to fight fires involving high explosives. Isolate area and immediately evacuate all personnel from the area to a safe distance using as much protective cover as possible.				
<b>Universal Fire and Explosives Hazards:</b> HIGH EXPLOSIVE!! The explosive is under confinement and may be caused to detonate by burning material surrounding the LSC. Metallic fragments are a secondary hazard.				

**SECTION V - REACTIVITY COMPATIBILITY DATA**

Instability	Unstable	No	Conditions To Avoid	High heat, shock, friction, impact, electrical discharge when supplied in sufficient energy can cause the LSC to detonate.
Stability	Stable	Yes	Stable under normal conditions	
<b>Incompatibility (Materials To Avoid):</b> Avoid alkalis, acids, oxidizers, chlorine, turpentine, halogens.				
<b>Hazardous Decomposition Products:</b> During decomposition, emits carbon dioxide, carbon monoxide, and oxides of nitrogen.				
Harmless Polymerization	May Occur	No	Conditions To Avoid	N/A
With Heat/Cold	Yes			

NOTE: Under normal conditions of handling and use, workers will not come in contact with the explosive component in the LSC. The "HEALTH HAZARD DATA" is provided for RDX, Desensitized in the unusual event of exposure caused by spillage from a damaged LSC. The metallic sheathing should not pose a serious health threat unless detonated or failure to thoroughly wash hands after contact.

**SECTION VI - HEALTH HAZARD DATA**

Risk/od of Entry:	Very Unlikely	Inhalation?	Yes (post-detonation fumes)	Risk? Unlikely	Ingestion?	Yes (improper personal hygiene practices)
Effect of Over-Exposure:						
<b>Aerosol:</b> Slight to serious effects						
<b>Chronic:</b> Not fully known						
<b>Signs and Symptoms of Exposure:</b> Can cause allergic skin reaction and eye irritation. Excessive exposure may cause convulsions, unconsciousness. Inhalation and ingestion can result in systemic poisoning, usually affecting the bone marrow and the liver.						
Medical Conditions Commonly Aggravated by Exposure:						
Workers should be in generally good health.						
Emergency First Aid Procedures:						
<b>Eye:</b> Flush with water for 15 minutes. Get medical attention.						
<b>Inhalation:</b> Remove to fresh air. Give oxygen if necessary. Get medical attention.						
<b>Skin:</b> Wash with soap and warm water. Get medical attention for rash or irritation.						
<b>Respiratory:</b> If conscious, induce vomiting immediately. Get medical attention.						
<b>Other:</b> N/A						
Consequences:	NEVER	Not listed	IARC Monograph?	Yes	OSHA Hazard?	Not listed

\* NOTE: Based primarily on the carcinogenicity of certain soluble lead salts in lab animals.

**SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE**

**Steps To Follow If Material Is Spilled or Released:** If RDX Desensitized is spilled from LSC, avoid any and all situations which could initiate the material, such as friction, impact, heat, or electrostatic discharge. Wet down material with water. Sweep up spill with a soft bristle brush and a non-metallic/non-sparking pan or shovel. Place material in a properly labeled storage container and store in an approved storage magazine for further disposition.

**Waste Disposal Method:** Dispose of in accordance with applicable local, state and federal regulations.

**Procedures To Be Taken In Handling and Storage:** Handle with care. Store only in authorized High Explosives magazine. Do not store with initiating (Primary) explosives.

**Other Precautions:** The metallic sheathed LSCs are US Class 1.1 hazardous material and the compatibility storage group (SCG) is D. Do not store with detonators or initiating explosives. Do not store with flammable liquids or solvents.

**SECTION VIII - PERSONAL PROTECTION INFORMATION**

Respiratory Protection (Specify Type): Under normal use, none is required.		
Visitation	Local Explosives: Under normal use, none required.	Special: N/A
	Maintained (General): Under normal use, none required.	Other: N/A
Protective Gloves	Innervious gloves are recommended to protect against possible contamination with lead.	
Type Protection: Safety glasses or goggles that meet or exceed ANSI Z87.1-1989		
Other Protective Clothing or Equipment	Cotton clothing recommended. Hearing protection should be worn when detonating LSC.	
Work/Hygiene Practices	Wash hands thoroughly after handling.	

**SECTION IX - SPECIAL PRECAUTIONS**

**Procedures To Be Taken:** CAUTION: High explosives are extremely dangerous. When detonated, high velocity metallic fragments are generated. The LSCs must be handled only by workers who are experienced and highly trained in the use of and familiar with the hazards inherent in explosives. When the LSCs are detonated or destructively tested, all personnel must be protected from the effects of blast overpressure and fragments. Allow the post detonation fumes and dust to clear before entering the area. Lead fumes and dust are highly toxic. Chronic inhalation of tin oxide dust or fumes leads to stannosis. Workers handling the lead sheathed LSCs should wash their hands before eating, smoking, or seeking. Follow all safety regulations and precautions when handling, storing, or processing explosive material.

The information contained herein is believed to be accurate and represents the best information currently available. Accurate Arms Company, Inc. makes no warranties or guarantees with respect to the safety or suitability of this product or the results obtained, either expressed or implied. Buyer and user assume any and all risk, responsibility, and liability for any and all injury (including death), loss, or damage arising from usage.